# TRANSMITTAL FORM

*(to be used for all correspondence after initial filing)*

| | |
|---|---|
| Application Number | 09/889,508 |
| Filing Date | October 18, 2001 |
| First Named Inventor | Masaou MATSUDA |
| Art Unit | 1771 |
| Examiner Name | J. A. Boyd |

| Total Number of Pages in This Submission | 15 | Attorney Docket Number | 358362010400 |
|---|---|---|---|

## ENCLOSURES  *(Check all that apply)*

| | | |
|---|---|---|
| [X] Fee Transmittal Form | [ ] Drawing(s) | [ ] After Allowance Communication to TC |
| [ ] Fee Attached | [ ] Licensing-related Papers | [ ] Appeal Communication to Board of Appeals and Interferences |
| [ ] Amendment/Reply | [ ] Petition | [X] Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) |
| [ ] After Final | [ ] Petition to Convert to a Provisional Application | [ ] Proprietary Information |
| [ ] Affidavits/declaration(s) | [ ] Power of Attorney, Revocation Change of Correspondence Address | [ ] Status Letter |
| [ ] Extension of Time Request | [ ] Terminal Disclaimer | [X] Other Enclosure(s) (please Identify below): |
| [ ] Express Abandonment Request | [ ] Request for Refund | Return Receipt Postcard |
| [ ] Information Disclosure Statement | [ ] CD, Number of CD(s) _____ | |
| [ ] Certified Copy of Priority Document(s) | [ ] Landscape Table on CD | |
| [ ] Reply to Missing Parts/ Incomplete Application | Remarks | |
| [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53 | | |

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

| Firm Name | MORRISON & FOERSTER LLP |
|---|---|
| Signature | |
| Printed name | Jonathan Bockman |
| Date | December 6, 2006 | Reg. No. | 45,640 |

va-184846

Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

# FEE TRANSMITTAL
## For FY 2006

| Complete if Known | |
|---|---|
| Application Number | 09/889,508 |
| Filing Date | October 18, 2001 |
| First Named Inventor | Masaou MATSUDA |
| Examiner Name | J. A. Boyd |
| Art Unit | 1771 |
| Attorney Docket No. | 358362010400 |

[ ] Applicant claims small entity status. See 37 CFR 1.27

| TOTAL AMOUNT OF PAYMENT | ($) 500.00 |
|---|---|

## METHOD OF PAYMENT (check all that apply)

[ ] Check  [ ] Credit Card  [ ] Money Order  [ ] None  [ ] Other (please identify): _____

[x] Deposit Account   Deposit Account Number: 03-1952   Deposit Account Name: Morrison & Foerster LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

[x] Charge fee(s) indicated below

[ ] Charge fee(s) indicated below, except for the filing fee

[x] Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17

[x] Credit any overpayments

## FEE CALCULATION (All the fees below are due upon filing or may be subject to a surcharge.)

### 1. BASIC FILING, SEARCH, AND EXAMINATION FEES

| Application Type | FILING FEES Fee ($) | FILING FEES Small Entity Fee ($) | SEARCH FEES Fee ($) | SEARCH FEES Small Entity Fee ($) | EXAMINATION FEES Fee ($) | EXAMINATION FEES Small Entity Fee ($) | Fees Paid ($) |
|---|---|---|---|---|---|---|---|
| Utility | 300 | 150 | 500 | 250 | 200 | 100 | |
| Design | 200 | 100 | 100 | 50 | 130 | 65 | |
| Plant | 200 | 100 | 300 | 150 | 160 | 80 | |
| Reissue | 300 | 150 | 500 | 250 | 600 | 300 | |
| Provisional | 200 | 100 | 0 | 0 | 0 | 0 | |

### 2. EXCESS CLAIM FEES

| Fee Description | Fee ($) | Small Entity Fee ($) |
|---|---|---|
| Each claim over 20 (including Reissues) | 50 | 25 |
| Each independent claim over 3 (including Reissues) | 200 | 100 |
| Multiple dependent claims | 360 | 180 |

| Total Claims | Extra Claims | Fee ($) | Fee Paid ($) |
|---|---|---|---|
| _____ - 20 = | _____ x | _____ = | _____ |

HP = highest number of total claims paid for, if greater than 20.

| Multiple Dependent Claims Fee ($) | Fee Paid ($) |
|---|---|
| _____ | _____ |

| Indep. Claims | Extra Claims | Fee ($) | Fee Paid ($) |
|---|---|---|---|
| _____ - 3 = | _____ x | _____ = | _____ |

HP = highest number of independent claims paid for, if greater than 3.

### 3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

| Total Sheets | Extra Sheets | Number of each additional 50 or fraction thereof | Fee ($) | Fee Paid ($) |
|---|---|---|---|---|
| _____ - 100 = | _____ /50 | _____ (round up to a whole number) x | _____ = | _____ |

### 4. OTHER FEE(S)

Fees Paid ($)

Non-English Specification, $130 fee (no small entity discount)

Other (e.g., late filing surcharge): 1402 Filing a brief in support of an appeal    500.00

## SUBMITTED BY

| Signature | | Registration No. (Attorney/Agent) | 45,640 | Telephone | (703) 760-7769 |
|---|---|---|---|---|---|
| Name (Print/Type) | Jonathan Bockman | | | Date | December 6, 2006 |

va-184845

# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Masaou MATSUDA et al.

| | |
|---|---|
| Application No.: 09/889,508 | Confirmation No.: 5230 |
| Filed: October 18, 2001 | Art Unit: 1771 |
| For: FLAME-RETARDANT POLYESTER FIBER, WOVEN OR KNITTED FLAME-RETARDANT POLYESTER FIBER FABRIC, NONWOVEN FLAME-RETARDANT POLYESTER FIBER FABRIC, AND WOVEN OR KNITTED SUEDE FABRIC | Examiner: J. A. Boyd |

## APPELLANTS' OPENING BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is a timely appeal from the final rejection of claims 1, 2, 4, and 6-12 in this application.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

## I. REAL PARTY IN INTEREST

The real party in interest for this appeal is: Toyo Boseki Kabushiki Kaisha

## II.   RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III.   STATUS OF CLAIMS

A.   Total Number of Claims in Application

There are 10 claims pending in application.

B.   Current Status of Claims

1.   Claims canceled:  3 and 5

2.   Claims withdrawn from consideration but not canceled:  0

3.   Claims pending:  1, 2, 4, and 6-12

4.   Claims allowed:  0

5.   Claims rejected:  1, 2, 4, and 6-12

C.   Claims On Appeal

The claims on appeal are claims 1, 2, 4, and 6-12

## IV.   STATUS OF AMENDMENTS

Applicants did not file an Amendment After Final Rejection.

## V.   SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 recites "a flame-retardant polyester fiber comprising a phosphorus compound copolymerized polyester comprising a phosphorus atom in a side chain." This phosphorous compound copolymerized polyester is described on page 11, lines 2-13. Claim 1 continues to state that the flame-retardant polyester fiber satisfies "the following formulas (1)-(3):

$$\tan \delta_{max} \geq 0.236 \qquad \qquad \text{(formula 1)}$$

$$T\alpha - 3.77 \times \ln (\text{dtpf}) \le 137.0 \qquad \text{(formula 2)}$$

$$1.331 \le SG - \frac{\sqrt{\Delta n}}{8.64} \le 1.345 \qquad \text{(formula 3)}$$

wherein tan $\delta_{max}$ is a maximum value of loss tangent in a dynamic viscoelasticity measurement, $T\alpha$ is a temperature at which loss tangent reaches the maximum, dtpf is single fiber fineness (dtex), SG is density (g/cm$^3$), $\Delta n$ is birefringence." Formula 1 is described on page 18, line 30 – page 19, line 8 of the specification. The value of 0.236 is supported by Examples 1-8, summarized in Table 1, which show fibers that have a tan $\delta_{max} \ge$ 0.236. Formula 2 is described on page 19, lines 8-14. Formula 3 is described on page 19, lines 15-26.

Claim 1 also states that "the flame-retardant polyester fiber is produced by melt-spinning at a take-up speed of 1000 m/min - 4500 m/min," which is supported on page 16, lines 9-13 of the specification; "has a phosphorus content of 500-50,000 ppm," which is supported on page 18, lines 18-25, of the specification; "has a shrinkage in hot water (SHW) of not more than 10%," which is supported on page 20, lines 11-17; "and in a yarn abrasion test the number of times before fiber breakage under a load of 0.098 N/tex is not less than 7720 times," which is supported on page 20, lines 4-10. The value of 7720 times is supported by Examples 1-4 and 6-8, which are summarized in Table 1 of the specification.

## VI.   GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

(1)   Claims 1, 2, 4, 6, 8, 11 and 12 under 35 USC 103(a) as being unpatentable over U.S. Patent No. 4,721,746 to Tashiro et al. (hereinafter Tashiro) in view of U.S. Patent 5,658,662 to Leumer (hereinafter Leumer);

(2)   Claims 7 under 35 USC 103(a) as being unpatentable over Tashiro in view of Leumer and U.S. Patent No. 4,101,526 to Buxbaum (hereinafter Buxbaum); and

(3)   Claims 9 and 10 under 35 USC 103(a) as being unpatentable over Tashiro in view of Leumer and U.S. Patent No. 5,952,413 to Vogt (hereinafter Vogt).

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## VII.   ARGUMENT

### A.   The rejection of claims 1, 2, 4, 6, 8, 11 and 12 under 35 USC 103 under 35 USC 103(a) as being unpatentable over Tashiro in view of Leumer should be reversed.

Claims 1, 2, 4, 6, 8, 11 and 12 stand rejected under 35 USC 103(a) as being unpatentable over Tashiro in view of Leumer.

As discussed above, claim 1 claims a flame-retardant polyester fiber that satisfies formulas (1)-(3). The Examiner admits that Tashiro and Leumer fail to disclose a fiber with these claimed properties, but nonetheless asserts that these claimed properties would be inherent.

MPEP 2112 lays out the requirements that apply to a rejection based on inherency. According to MPEP 2112:

> The fact that a certain result or characteristic <u>may</u> occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); In re Oelrich, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted)...

Accordingly, the Examiner must provide evidence that the fibers in Tashiro and Leumer would <u>necessarily</u> satisfy formulas (1)-(3). As described below, since Tashiro and Leumer fail to

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describe a fiber produced with the claimed draw ratio, a fiber produced according to Tashiro and Leumer would not <u>necessarily</u> satisfy formulas (1)-(3).

Tashiro describes a flameproof polyester fiber made from a side chain type phosphoric compound copolymerized polyester. Examples of such fibers are provided in Examples 29-33 of Tashiro. However, the flameproof fibers described in Examples 29-33 are staple tow fibers, which were drawn 3.5-fold in a hot water tank at 90°C. In addition, the flameproof polyester fibers produced in Examples 1-28 were also staples tow fibers, which were drawn 3.5-fold in a hot water tank at 90°C.

Drawing a fiber after spinning affects the dyeability and abrasion resistance of the fiber. A higher draw ratio degrades the dyeability and abrasion resistance of the fiber. Accordingly, in the Examples of this application the highest draw ratio that was used was 2.8 fold. In addition, staple tow fibers are generally susceptible to high surface abrasion and are, accordingly, easily worn. Appellants have found that satisfying formulas 1-3, which are included in claim 1, depends upon the dyeability and abrasion resistance of the fiber. Since Tashiro only describes staple tow fibers that were drawn at a draw ratio far higher than the claimed draw ratio, a flame-retardant polyester fiber that satisfies these formulas would not be inherent to fibers produced according to Tashiro.

Leumer is directed to producing a fiber having an extremely high strength for use as an industrial material. To achieve this high strength, Leumer discloses a high total draw ratio of 4.5 to 6.0-fold. Accordingly, Leumer, like Tashiro, discloses a fiber created with a draw ratio far above the draw ratio used by Appellants. Since the high draw ratios used in Leumer and Tashiro would negatively affect both dyeability and abrasion resistance of the fiber, a fiber a flame-retardant polyester fiber that satisfies the formulas would not be inherent to fibers produced according to the methods described in Tashiro and Leumer.

In the final action dated July 10, 2006, the Examiner contests Appellants' assertion that Tashiro and Leumer fail to disclose a fiber produced with a draw ratio as low as appellant's.

Specifically, the Examiner states "Applicant indicates that the draw ratio taught by Leumer is 4.5-6.0, however, in column 8, lines 55-65, Leumer teaches that the draw ratio is 1:4.5 to 1:6 (column 8, lines 60-65)" The Examiner apparently is unfamiliar with draw ratios as a draw ratio of "1:4.5 to 1:6" is the same as a draw ratio of 4.5-6.

As described above, since neither Leumer nor Tashiro disclose producing a fiber with the draw ratio utilized by Appellants, a fiber produced according to Tashiro and Leumer would not necessarily satisfy formulas (1)-(3). Accordingly, the rejection of claim 1 should be reversed. The rejection of claims 2, 4, 6, 8, 11 and 12, which depend from claim 1, should be reversed for at least the same reasons provided for claim 1.

**B.    The rejection of claim 7 under 35 USC 103 under 35 USC 103(a) as being unpatentable over Tashiro in view of Leumer and Buxbaum should be reversed.**

Claims 7 stands rejected under 35 USC 103(a) as being unpatentable over Tashiro in view of Leumer and Buxbaum.

Claim 7 depends from claim 1. Vogt is cited by the Examiner only with respect to the claimed organic fluorescent brightener, condensation polymerization catalyst, antimony compound, and germanium compound. Accordingly, Vogt fails to cure the deficiencies in Tashiro and Leumer as described above. Accordingly, this rejection of claim 7 should be reversed for at least the same reasons provided with respect to claims 1, 2, 4, 6, 8, 11 and 12.

**C.    The rejection of claims 9 and 10 under 35 USC 103 under 35 USC 103(a) as being unpatentable over Tashiro in view of Leumer and Vogt should be reversed.**

Claims 9 and 10 stand rejected under 35 USC 103(a) as being unpatentable over Tashiro in view of Leumer and Vogt.

Claims 9 and 10 depend from claim 1. Vogt is cited by the Examiner only with respect to the claimed raising treatment. Accordingly, Vogt fails to cure the deficiencies in Tashiro and

Leumer as described above. Accordingly, this rejection of claims 9 and 10 should be reversed for at least the same reasons provided with respect to claims 1, 2, 4, 6, 8, 11 and 12.
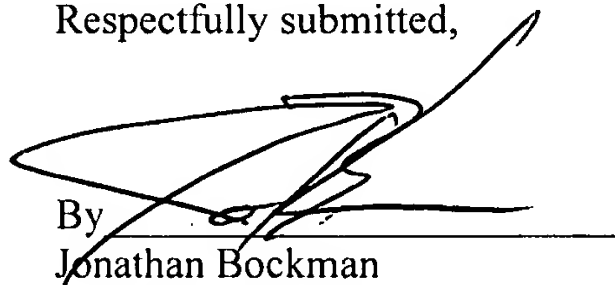
## CONCLUSION

For the foregoing reasons, appellants respectfully request the Board reverse the final rejections of claims 1, 2, 4, and 6-12.

In the event the U.S. patent and Trademark Office determines that an extension and/or other relief is required, appellants petition for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing Attorney Docket No. **358362010400**.

Dated: December 6, 2006                    Respectfully submitted,

By

Jonathan Bockman
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va-175740

## APPENDIX OF CLAIMS

1. A flame-retardant polyester fiber comprising a phosphorus compound copolymerized polyester comprising a phosphorus atom in a side chain and satisfying the following formulas (1)-(3):

$$\tan \delta_{max} \geq 0.236 \qquad \text{(formula 1)}$$

$$T\alpha - 3.77 \times \ln(\text{dtpf}) \leq 137.0 \qquad \text{(formula 2)}$$

$$1.331 \leq SG - \frac{\sqrt{\Delta n}}{8.64} \leq 1.345 \qquad \text{(formula 3)}$$

wherein $\tan \delta_{max}$ is a maximum value of loss tangent in a dynamic viscoelasticity measurement, $T\alpha$ is a temperature at which loss tangent reaches the maximum, dtpf is single fiber fineness (dtex), SG is density (g/cm$^3$), $\Delta n$ is birefringence and wherein the flame-retardant polyester fiber is produced by melt-spinning at a take-up speed of 1000 m/min - 4500 m/min, has a phosphorus content of 500-50,000 ppm, has a shrinkage in hot water (SHW) of not more than 10%, and in a yarn abrasion test the number of times before fiber breakage under a load of 0.098 N/tex is not less than 7720 times.

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2. The flame-retardant polyester fiber of claim 1, which comprises a copolymerized polyester obtained by adding a phosphorus compound of the following formula (1):
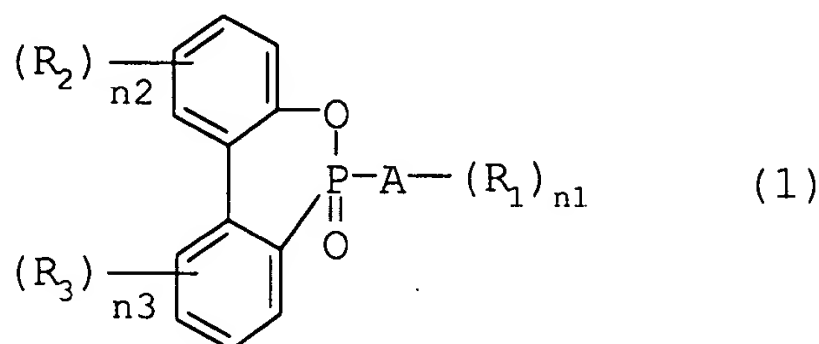


wherein $R_1$ is a monovalent ester-forming functional group, $R_2$ and $R_3$ are the same or different and each is selected from a halogen atom, a hydrocarbon group having 1 to 10 carbon atoms and $R_1$, A is a divalent or trivalent organic residue, n1 is 1 or 2 and n2 and n3 are each an integer of 0 to 4.

3. (Canceled).

4. The flame-retardant polyester fiber of claim 1, which shows a tensile elongation at break (DE) of 20-50%.

5. (Canceled).

6. The flame-retardant polyester fiber of claim 1, which satisfies the following formula 4, wherein a L value is not less than 67 and a b value is not more than 10.00 as measured with a Hunter's color-difference meter:

$$\%B.B. < 0.5 \text{ (formula 4)}$$

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wherein %B.B. is a proportion of ester bond broken upon immersion in a closed system in pure water at 130°C for 6 h, which can be determined by the following formula (5) wherein an intrinsic viscosity before immersion is $[\eta]_i$ and that after immersion is $[\eta]_f$, and the intrinsic viscosity is determined in a mixed solvent of phenol/1,1,2,2-tetrachloroethane (weight ratio 3/2) at 30°C:

$$\%B.B. = 0.244 \times \{[\eta]_f^{-1.471} - [\eta]_i^{-1.471}\} \text{ (formula 5)}.$$

7. The flame-retardant polyester fiber of claim 1, wherein the phosphorus compound copolymerized polyester comprises an organic fluorescent brightener in a proportion of 0.01-1 wt% and, as a condensation polymerization catalyst, an antimony compound, a germanium compound and a cobalt compound in amounts that simultaneously satisfy the following formulas (6)-(9):

$$30 \le S \le 400 \qquad \text{(formula 6)}$$

$$10 \le G \le 100 \qquad \text{(formula 7)}$$

$$5 \le C \le 40 \qquad \text{(formula 8)}$$

$$200 \le S+2G+C \le 400 \qquad \text{(formula 9)}$$

wherein S, G and C are each a content (ppm) of an antimony atom, germanium atom or cobalt atom relative to the polyester.

8. A flame-retardant polyester woven or knitted fabric comprising the flame-retardant polyester fiber of claim 1.

9. A suede raised woven or knitted fabric, which is a raised woven, knitted fabric comprising the flame-retardant polyester woven or knitted of claim 8 that underwent a raising treatment, and which shows a coefficient of friction of a surface of the woven, knitted fabric by a surface tester KES-FB4 of 0.200-0.300.

10.  A flame-retardant polyester raised warp knitted fabric, which is a raised woven or knitted fabric comprising the flame-retardant polyester woven or knitted of claim 8 subjected to a raising treatment, and which shows an after-flame time of not more than 3 sec as measured by the following test method:

a flame of a lighter is drawn up to a bottom end of a specimen (1.5 cm × 20 cm) stood vertically and the flame is drawn back when the specimen is inflamed, along with which the after-flame time of the specimen is measured.

11.  A flame-retardant polyester non-woven fabric comprising the flame-retardant polyester fiber of claim 1.

12.  The flame-retardant polyester fiber of claim 1, wherein the fiber is obtained by drawing, after melt spinning, at a draw ratio of not more than 2.88 and at a setting temperature of not less than 150°C.

## EVIDENCE APPENDIX

## [NONE.]

# RELATED PROCEEDINGS APPENDIX

## [NONE.]